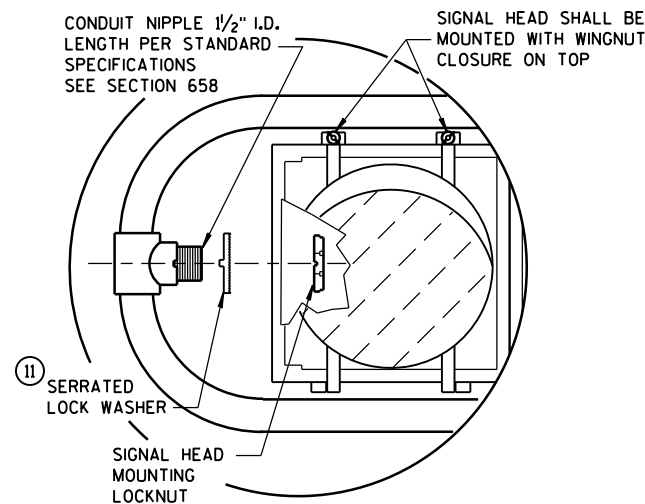


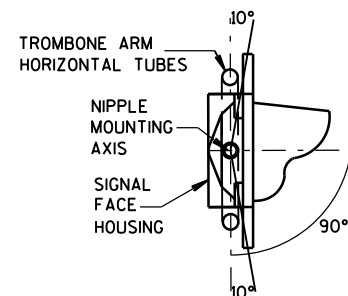


9E1 sheet a: Pole Mountings for Traffic Signals Type 2



HORIZONTAL SIGNAL HEAD MOUNTING DETAIL *

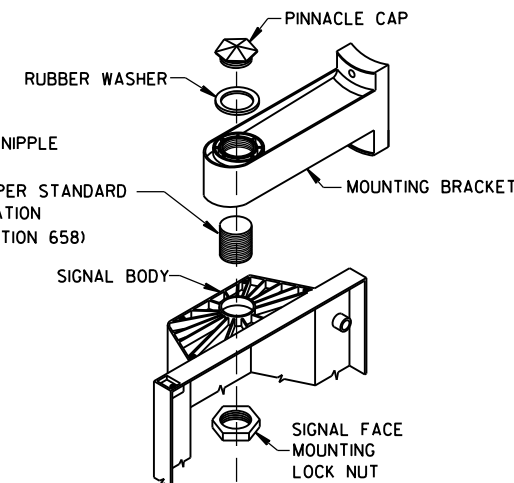
* SIGNAL HEAD ATTACHMENT ALSO APPLYS TO MOUNTING AT CROSS BAR



SECTION A-A

(10 DEGREES TILT REQUIREMENT OF FACE(S) IN THE TROMBONE MOUNTING)

CONDUIT NIPPLE
1/2" I.D.
LENGTH PER STANDARD
SPECIFICATION
(SEE SECTION 658)



**SIGNAL FACE MOUNTING DETAIL
(BANDED)**

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

POLES SHALL BE EITHER ALUMINUM OR GALVANIZED STEEL AS CALLED FOR IN THE CONTRACT.

SECTION 657, POLES, OF THE STANDARD SPECIFICATIONS SHALL APPLY TO THIS DRAWING.

A PULL WIRE/ROPE IN ACCORDANCE WITH STANDARD SPECIFICATION 652 SHALL BE INSTALLED IN EACH TROMBONE ARM RACEWAY DURING THE MANUFACTURING PROCESS.

TYPE 2 ALUMINUM POLES SHALL BE CONSTRUCTED OF 6063-T6 ALUMINUM ALLOY. SLEEVING INSIDE THE POLE IS NOT ACCEPTABLE.

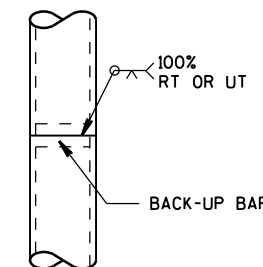
WHEN TRANSFORMER BASES ARE USED, WIRE CONNECTIONS SHALL BE MADE IN THE TRANSFORMER BASE.

- ① 4" X 6" REINFORCED HANDHOLE & COVER ASSEMBLY WITH 2 (TWO) 1/4" X 3/4" - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.
- ② SIGNAL FACE MOUNTING BRACKETS. MOUNT WITH CAP SCREWS AND BANDING. (SEE STANDARD SPECIFICATIONS - SEC. 658)
- ③ GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR 1 1/8" HOLE IN POLE SHAFT FOR WIRING.
- ④ SECURELY MOUNT DULL BLACK POLYCARBONATE BACKPLATES, PROJECTING 5" BEYOND ALL SIDES OF THE SIGNAL FACE HOUSING, PER MANUFACTURER'S RECOMMENDATIONS.
- ⑤ POLE MOUNTED SIGNAL FACES SHALL REQUIRE 10R MORE MOUNTING SPACERS UNDER THE TOP MOUNTING BRACKET(S) AS REQUIRED, TO PLUMB THE SIGNAL FACES.
- ⑥ CAST ALUMINUM TRANSFORMER BASE, WHEN REQUIRED.
- ⑦ MOUNTING BRACKET NIPPLES FOR THE SIGNAL FACE(S) SHALL BE 2 INCHES IN LENGTH AND 1 1/2 INCHES IN DIAMETER. (SEE STANDARD SPECIFICATION - SECTION 658).
- ⑧ VERTICAL STRUT (ADJUSTABLE), ONE (1) SET SCREW (1/4" X 3/4" LONG-20 TPI, STAINLESS STEEL, HEX HEAD) INTO EACH ARM MEMBER IF STRUT IS THE SLIDING TYPE.
- ⑨ FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) 1/4" X 3/4" - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.
- ⑩ SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND THE TRANSFORMER BASE.
- ⑪ USE SERRATED LOCK WASHERS WITH NOTCHES BETWEEN END TEE AND SIGNAL HEAD.

*MOUNTING HEIGHT LIMITATION DIMENSIONS OF THE TROMBONE MAST ARM WILL BE DEPENDENT UPON THE USE/NON-USE OF A TRANSFORMER BASE.

FOR MANUFACTURERS USE ONLY

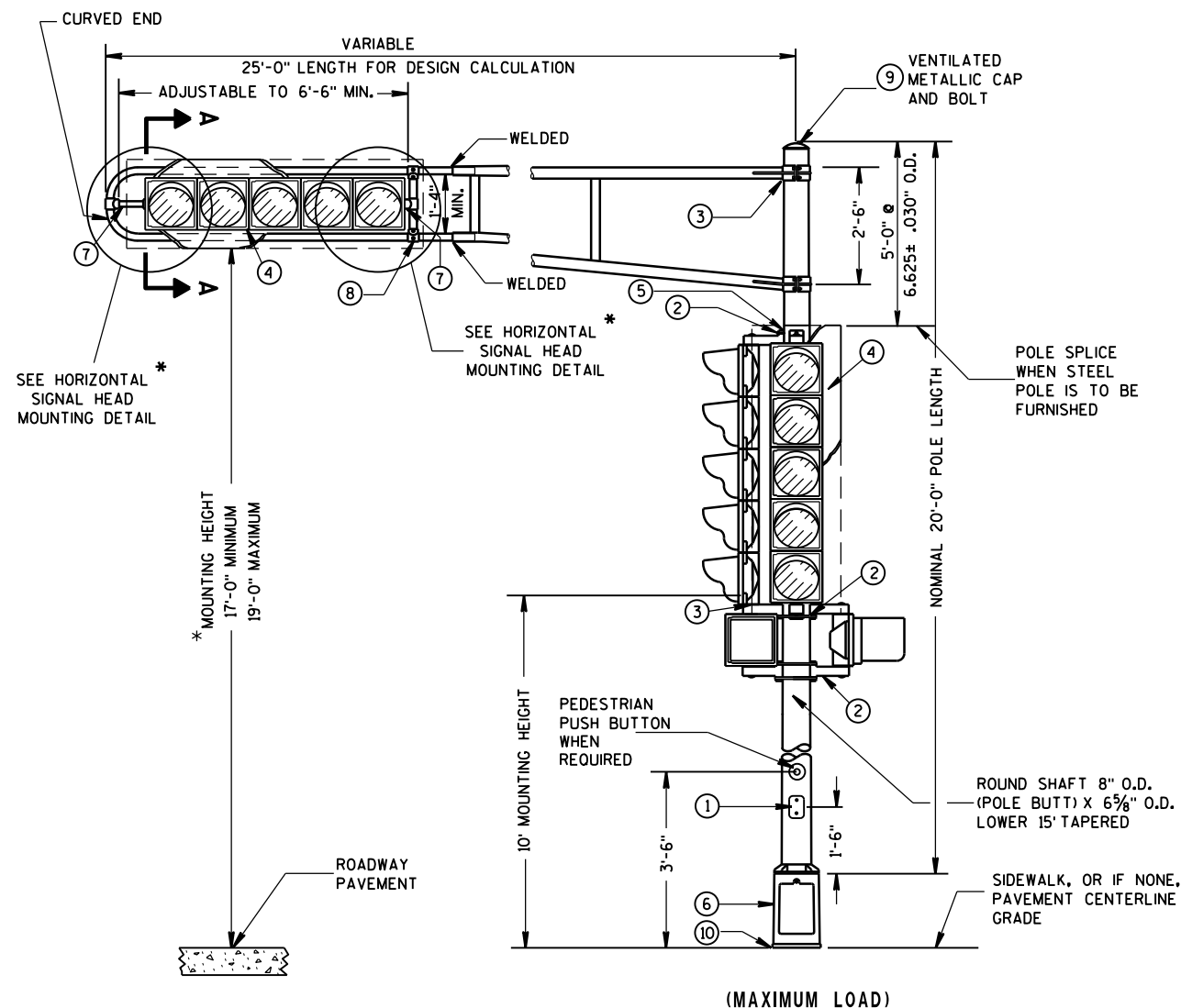
WELD TO BE 100% R.T. OR U.T. TESTED AS PER THE REQUIREMENTS OF AWS D 1.5-88. RECORDS OF COMPLIANCE OF SUCH TESTING SHALL BE FURNISHED TO THE OFFICE OF DESIGN/BRIDGE FOR VERIFICATION AND APPROVAL.



POLE SPLICE DETAIL

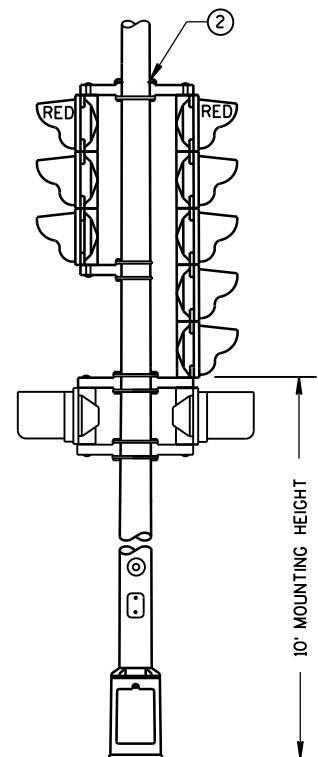
**POLE MOUNTINGS FOR
TRAFFIC SIGNALS
TYPE 2**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

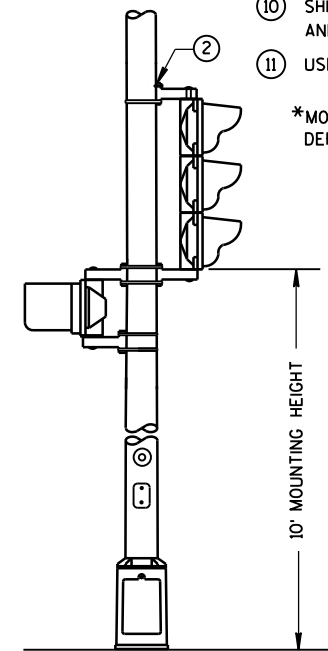


**TYPICAL MOUNTING OF BACK TO BACK
3 AND 5 SECTION SIGNAL FACES**

TYPE 2 POLE MOUNTING CONFIGURATION



**TYPICAL MOUNTING OF 3 SECTION
SIGNAL FACE**



*Pole Mountings for Traffic Signals Type 2***References:**

[Standard Spec 657](#) Poles, Arms, Standards, and Bases

Bid items associated with this drawing:

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
654.0102	Concrete Bases Type 2	EACH
655.0200 - 0299	Cable Traffic Signal (# of conductors)(AWG)	LF
657.0255	Transformer Bases Breakaway 11 1/2-Inch Bolt Circle	EACH
657.0305	Poles Type 2.....	EACH
657.0560 - 0599	Trombone Arms (length).....	EACH
658.0100 - 0199	Traffic Signal Face (size) (vertical or horizontal)	EACH
658.0200 - 0290	Backplates Signal Face (# section) (size)	EACH
658.0412	Pedestrian Signal Faces 12 - Inch.....	EACH
658.0500	Pedestrian Push Buttons	EACH
658.5069	Signal Mounting Hardware (location)	LS
658.0600 - 0629	LED Modules (size) (color) (type).....	EACH
658.0630 - 0659	LED Modules Pedestrian Countdown Timer (size)	EACH
658.0660 - 0689	LED Modules Countdown Timer (size).....	EACH
658.1100 - 1199	Programmable Traffic Signal Face (size) (vertical or horizontal)	EACH

Standardized Special Provisions associated with this drawing:

<u>STSP NUMBER</u>	<u>TITLE</u>
NONE	

Other SDDs associated with this drawing:

SDD 9c2	Concrete Bases, Types 1, 2, and 5
SDD 9c3	Transformer/Pedestal Bases
SDD 9e1	Hardware Details for Pole Mountings sheet "g" is required.

Design Notes:

NONE

Contact Person:

Ahmet Demirbilek (414) 220-6801



9E1 sheet b: Pole Mountings for Traffic Signals and Lighting Units Type 3 (Heavy Duty)

FOR MANUFACTURERS USE ONLY

WELD TO BE 100% R.T. OR U.T. TESTED AS PER THE REQUIREMENTS OF AWS D 1.5-88. RECORDS OF COMPLIANCE OF SUCH TESTING SHALL BE FURNISHED TO THE OFFICE OF DESIGN/BRIDGE FOR VERIFICATION AND APPROVAL.

* RISE FOR 4' ARM SHALL BE 2'-0".

POLE SPLICE DETAIL

INTERCHANGEABLE MOUNTING DETAIL

SIGNAL FACE MOUNTING DETAIL (BANDED)

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

ALL TYPE 3 POLE MOUNTINGS SHALL BE DESIGNED TO INCLUDE TWIN 15' ARMS WITH LUMINAIRES.

POLES SHALL BE GALVANIZED STEEL.

SECTION 657, POLES, OF THE STANDARD SPECIFICATIONS SHALL APPLY TO THIS DRAWING.

A PULL WIRE/ROPE IN ACCORDANCE WITH STANDARD SPECIFICATION 652, SHALL BE INSTALLED IN EACH TROMBONE ARM RACEWAY DURING THE MANUFACTURING PROCESS.

THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL $2\frac{3}{8}$ INCHES IN OUTSIDE DIAMETER. THE STRAIGHT PORTION OF THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 12 INCHES IN LENGTH.

WHEN TRANSFORMER BASES ARE USED, WIRE CONNECTIONS SHALL BE MADE IN THE TRANSFORMER BASE.

- 4" X 6" REINFORCED HANDHOLE & COVER ASSEMBLY WITH 2 (TWO) $\frac{1}{4}$ " X $\frac{3}{4}$ " - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.
- SIGNAL FACE MOUNTING BRACKETS, MOUNT WITH CAP SCREWS AND BANDING. (SEE STANDARD SPECIFICATIONS - SEC. 658)
- GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR $1\frac{3}{8}$ " HOLE IN POLE SHAFT FOR WIRING.
- SECURELY MOUNT DULL BLACK POLYCARBONATE BACKPLATES, PROJECTING 5" BEYOND ALL SIDES OF THE SIGNAL FACE HOUSING, PER MANUFACTURER'S RECOMMENDATIONS.
- POLE MOUNTED SIGNAL FACES SHALL REQUIRE 1 OR MORE MOUNTING SPACERS UNDER THE TOP MOUNTING BRACKET(S) AS REQUIRED, TO PLUMB THE SIGNAL FACE.
- TYPE 3 POLE CONFIGURATIONS SHALL BE MOUNTED DIRECTLY TO THEIR CONCRETE BASES.
- MOUNTING BRACKET NIPPLES FOR THE SIGNAL FACE(S) SHALL BE 2 INCHES IN LENGTH AND $\frac{1}{2}$ INCHES IN DIAMETER. (SEE STANDARD SPECIFICATION - SECTION 658)
- VERTICAL STRUT (ADJUSTABLE). ONE (1) SET SCREW ($\frac{1}{4}$ " X $\frac{3}{4}$ " - 20 TPI, STAINLESS STEEL, HEX HEAD) INTO EACH ARM MEMBER IF STRUT IS THE SLIDING TYPE.
- FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) $\frac{1}{4}$ " X $\frac{3}{4}$ " - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.
- SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND POLE.
- USE SERRATED LOCK WASHERS WITH NOTCHES BETWEEN END TEE AND SIGNAL HEAD.

HORIZONTAL SIGNAL HEAD MOUNTING DETAIL **

** SIGNAL HEAD ATTACHMENT ALSO APPLYS TO MOUNTING AT CROSS BAR

POLE MOUNTINGS FOR
TRAFFIC SIGNALS AND
LIGHTING UNITS, TYPE 3
(HEAVY DUTY)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

6

S.D.D. 9 E 1-14b

S.D.D. 9 E 1-14b

*Pole Mountings for Traffic Signals and Lighting Units Type 3 (Heavy Duty)***References**

[Standard Spec 657](#) - Poles, Arms, Standards, and Bases

Bid items associated with this drawing:

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
654.0102	Concrete Bases Type 2	EACH
655.0200 - 0299	Cable Traffic Signal (# of conductors)(AWG)	EACH
655.0600 - 0699	Electrical Wire Lighting (AWG)	EACH
657.0310	Poles Type 3.....	EACH
657.0560 - 0599	Trombone Arms (length).....	EACH
657.0609	Luminaire Arms Single Member 4-Inch Clamp 6-FT	EACH
657.0614	Luminaire Arms Single Member 4-Inch Clamp 8-FT	EACH
657.0704	Luminaire Arms Truss Type 4-Inch Clamp 10-FT	EACH
657.0709	Luminaire Arms Truss Type 4-Inch Clamp 12-FT	EACH
657.0714	Luminaire Arms Truss Type 4-Inch Clamp 15-FT	EACH
658.0100 - 0199	Traffic Signal Face (size) (vertical or horizontal)	EACH
658.0200 - 0290	Backplates Signal Face (# section) (size)	EACH
658.0412	Pedestrian Signal Faces 12 - Inch.....	EACH
658.0500	Pedestrian Push Buttons	EACH
658.0600 - 0629	LED Modules (size) (color) (type).....	EACH
658.0630 - 0659	LED Modules Pedestrian Countdown Timer (size)	EACH
658.0660 - 0689	LED Modules Countdown Timer (size).....	EACH
658.1100 - 1199	Programmable Traffic Signal Face (size) (vertical or horizontal)	EACH
658.5069	Signal Mounting Hardware (location)	LS
659.1100 - 1199	Luminaires Utility LED (Category)	EACH

Standardized Special Provisions associated with this drawing:

<u>STSP NUMBER</u>	<u>TITLE</u>
NONE	

Other SDDs associated with this drawing:

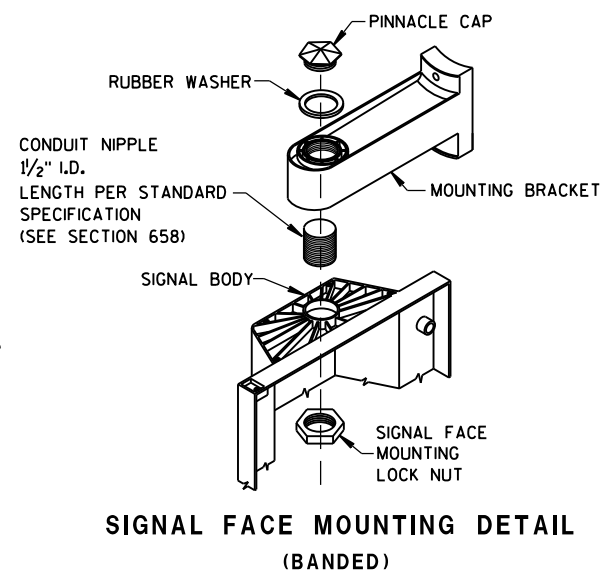
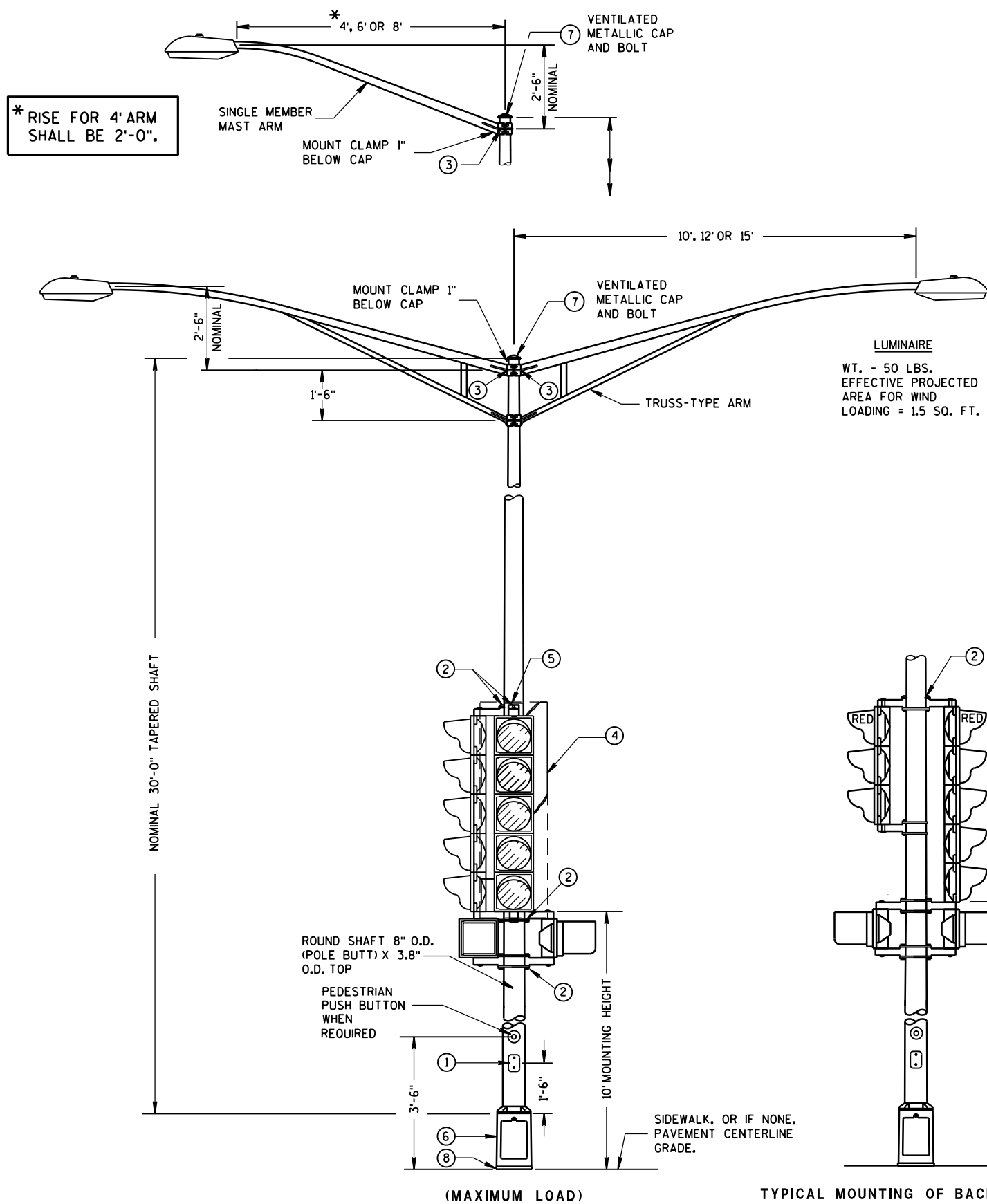
SDD 9c2	Concrete Base, Type 2
SDD 9e1	Hardware Details for Pole Mountings sheet "g" is required.
SDD 9e3	Non-Freeway Lighting Unit Pole Wiring

Design Notes:

Use 4-inch clamps.

Contact Person:

Ahmet Demirbilek (414) 220-6801



GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN
ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS
OF THE CONTRACT.

ALL TYPE 4 POLE MOUNTINGS SHALL BE DESIGNED TO INCLUDE TWIN 15' ARMS WITH LUMINAIRES.

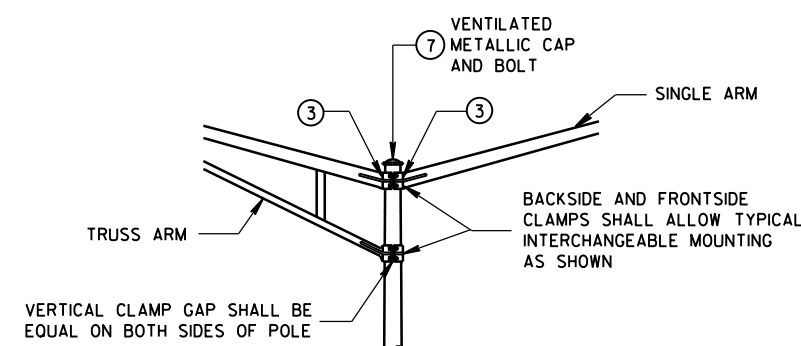
POLES SHALL BE GALVANIZED STEEL WITH A MINIMUM WALL THICKNESS OF U.S. STANDARD 11 GAGE (.1196").

SECTION 657, POLES, OF THE STANDARD SPECIFICATIONS SHALL APPLY TO THIS DRAWING.

THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 2 3/8 INCHES IN OUTSIDE DIAMETER. THE STRAIGHT PORTION OF THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 12 INCHES IN LENGTH.

WHEN TRANSFORMER BASES ARE USED, CONNECTIONS SHALL BE MADE IN THE TRANSFORMER BASE.

- ① 4" X 6" REINFORCED HANDHOLE & COVER ASSEMBLY WITH 2 (TWO) 1/4" X 3/4" - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.
- ② SIGNAL FACE MOUNTING BRACKETS, MOUNT WITH CAP SCREWS AND BANDING. (SEE STANDARD SPECIFICATIONS - SEC. 658).
- ③ GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR 1 3/8" HOLE IN POLE SHAFT FOR WIRING.
- ④ SECURELY MOUNT DULL BLACK POLYCARBONATE BACKPLATES, PROJECTING 5" BEYOND ALL SIDES OF THE SIGNAL FACE HOUSING, PER MANUFACTURER'S RECOMMENDATIONS.
- ⑤ POLE MOUNTED SIGNAL FACES SHALL REQUIRE 1 OR MORE MOUNTING SPACERS UNDER THE TOP MOUNTING BRACKET(S) AS REQUIRED, TO PLUMB THE SIGNAL FACE.
- ⑥ CAST ALUMINUM TRANSFORMER BASE, WHEN REQUIRED.
- ⑦ FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) 1/4" X 3/4" - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.
- ⑧ SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND THE TRANSFORMER BASE.



INTERCHANGEABLE MOUNTING DETAIL

TYPICAL MOUNTING OF BACK TO BACK
3 AND 5 SECTION SIGNAL FACES

TYPICAL MOUNTING OF 3 SECTION
SIGNAL FACE

TYPE 4 POLE MOUNTING CONFIGURATION

POLE MOUNTINGS FOR TRAFFIC SIGNALS AND LIGHTING UNITS, TYPE 4

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

*Pole Mountings for Traffic Signals and Lighting Units Type 4***References:**

[Standard Spec 657](#) - Poles, Arms, Standards, and Bases

Bid items associated with this drawing:

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
654.0102	Concrete Bases Type 2	EACH
655.0200 - 0299	Cable Traffic Signal (# of conductors)(AWG)	EACH
655.0600 - 0699	Electrical Wire Lighting (AWG)	EACH
657.0255	Transformer Bases Breakaway 11 1/2-Inch Bolt Circle	EACH
657.0315	Poles Type 4.....	EACH
657.0609	Luminaire Arms Single Member 4-Inch Clamp 6-FT	EACH
657.0614	Luminaire Arms Single Member 4-Inch Clamp 8-FT	EACH
657.0704	Luminaire Arms Truss Type 4-Inch Clamp 10-FT	EACH
657.0709	Luminaire Arms Truss Type 4-Inch Clamp 12-FT	EACH
657.0714	Luminaire Arms Truss Type 4-Inch Clamp 15-FT	EACH
658.0100 - 0199	Traffic Signal Face (size) (vertical or horizontal)	EACH
658.0200 - 0290	Backplates Signal Face (# section) (size)	EACH
658.0412	Pedestrian Signal Faces 12 - Inch.....	EACH
658.0500	Pedestrian Push Buttons	EACH
658.0600 - 0629	LED Modules (size) (color) (type).....	EACH
658.0630 - 0659	LED Modules Pedestrian Countdown Timer (size)	EACH
658.0660 - 0689	LED Modules Countdown Timer (size).....	EACH
658.1100 - 1199	Programmable Traffic Signal Face (size) (vertical or horizontal)	EACH
658.5069	Signal Mounting Hardware (location)	LS
659.1100 - 1199	Luminaires Utility LED (Category)	EACH

Standardized Special Provisions associated with this drawing:

<u>STSP NUMBER</u>	<u>TITLE</u>
NONE	

Other SDDs associated with this drawing:

SDD 9c2	Concrete Bases, Types 1, 2, and 5
SDD 9c3	Transformer/Pedestal Bases
SDD 9e1	Hardware Details for Pole Mountings sheet "g" is required.
SDD 9e3	Non-Freeway Lighting Unit Pole Wiring

Design Notes:

Use 4-inch clamps.

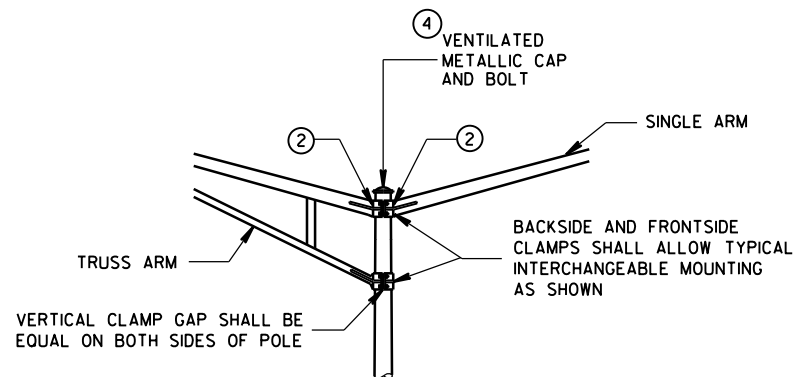
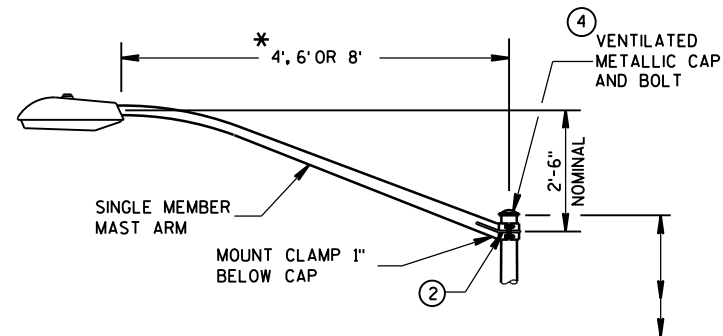
Contact Person:

Ahmet Demirbilek (414) 220-6801

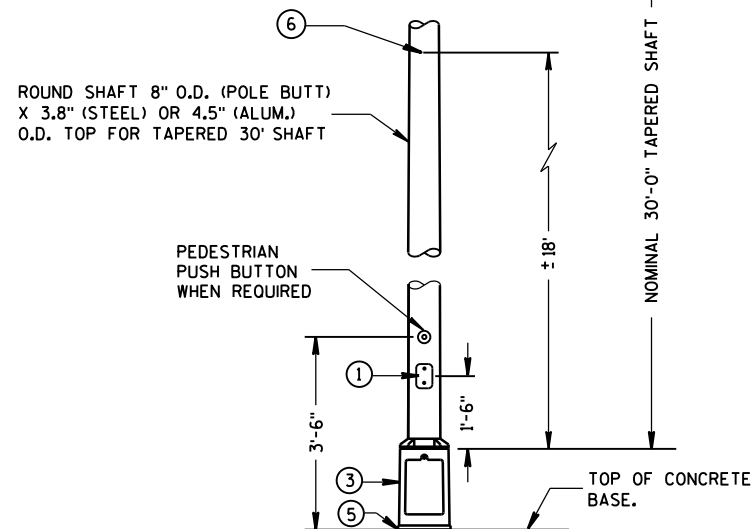
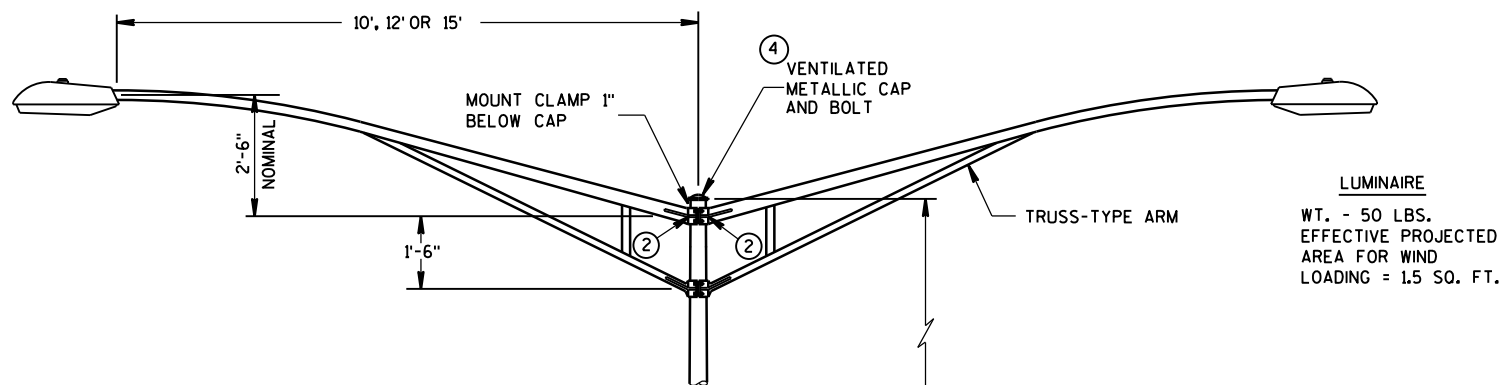


9E1 sheet d: Pole Mountings for Traffic Signals and Lighting Units Type 5 (30 feet)

* RISE FOR 4' ARM SHALL BE 2'-0".



INTERCHANGEABLE MOUNTING DETAIL



TYPE 5 POLE MOUNTING CONFIGURATION
(MAXIMUM LOAD)
LIGHTING ONLY

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.
ALL TYPE 5 POLE MOUNTINGS SHALL BE DESIGNED TO INCLUDE TWIN 15' ARMS WITH LUMINAIRES.

POLES SHALL BE GALVANIZED STEEL OR ALUMINUM, AS CALLED FOR IN THE CONTRACT.

TYPE 5 ALUMINUM POLES SHALL BE CONSTRUCTED OF 6063-T6 ALUMINUM ALLOY. SLEEVING INSIDE THE POLE IS NOT ACCEPTABLE.

THE TYPE 5 ALUMINUM POLES SHALL HAVE A MINIMUM WALL THICKNESS OF 0.188".

TYPE 5 STEEL POLES SHALL HAVE A MINIMUM WALL THICKNESS OF U.S. STANDARD 11 GAGE (.1196").

THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 2 3/8 INCHES IN OUTSIDE DIAMETER. THE STRAIGHT PORTION OF THE SLIPFITTER END OF THE LUMINAIRE ARM SHALL BE A NOMINAL 12 INCHES IN LENGTH.

WHEN TRANSFORMER BASES ARE USED, WIRE CONECTIONS SHALL BE MADE IN THE TRANSFORMER BASE.

- ① 4" x 6" REINFORCED HANDHOLE & COVER ASSEMBLY WITH 2 (TWO) 1/4" x 3/4" - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.
- ② GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR 1 3/8" HOLE IN POLE SHAFT FOR WIRING.
- ③ CAST ALUMINUM TRANSFORMER BASE, WHEN REQUIRED.
- ④ FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) 1/4" x 3/4" - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.
- ⑤ SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND THE TRANSFORMER BASE.
- ⑥ INTERNAL DUMBBELL-TYPE VIBRATION DAMPER.

POLE MONTINGS FOR
LIGHTING UNITS, TYPE 5
(30 FEET)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

*Pole Mountings for Traffic Signals and Lighting Units Type 5 (30 feet)***References**

[Standard Spec 657](#) - Poles, Arms, Standards, and Bases

Bid items associated with this drawing:

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
654.0105	Concrete Bases Type 5	EACH
655.0600 - 0699	Electrical Wire Lighting (AWG)	EACH
657.0255	Transformer Bases Breakaway 11 1/2-Inch Bolt Circle	EACH
657.0321	Poles Type 5-Steel	EACH
657.0322	Poles Type 5-Aluminum	EACH
657.0605	Luminaire Arms Single Member 4 1/2-Inch Clamp 4-FT	EACH
657.0609	Luminaire Arms Single Member 4-Inch Clamp 6-FT	EACH
657.0610	Luminaire Arms Single Member 4 1/2-Inch Clamp 6-FT	EACH
657.0614	Luminaire Arms Single Member 4-Inch Clamp 8-FT	EACH
657.0615	Luminaire Arms Single Member 4 1/2-Inch Clamp 8-FT	EACH
657.0704	Luminaire Arms Truss Type 4-Inch Clamp 10-FT	EACH
657.0705	Luminaire Arms Truss Type 4 1/2-Inch Clamp 10-FT	EACH
657.0709	Luminaire Arms Truss Type 4-Inch Clamp 12-FT	EACH
657.0710	Luminaire Arms Truss Type 4 1/2-Inch Clamp 12-FT	EACH
657.0714	Luminaire Arms Truss Type 4-Inch Clamp 15-FT	EACH
657.0715	Luminaire Arms Truss Type 4 1/2-Inch Clamp 15-FT	EACH
659.1100 - 1199	Luminaires Utility LED (Category)	EACH

Standardized Special Provisions associated with this drawing:

<u>STSP NUMBER</u>	<u>TITLE</u>
NONE	

Other SDDs associated with this drawing:

SDD 9c2	Concrete Bases, Types 1, 2, 5 and 6
SDD 9c3	Transformer/Pedestal Bases
SDD 9e1	Hardware Details for Pole Mountings sheet "g" is required.
SDD 9e3	Non-Freeway Lighting Unit Pole Wiring

Design Notes:

Use 4-inch clamps with steel poles.

Use 4 1/2-inch clamps with aluminum poles.

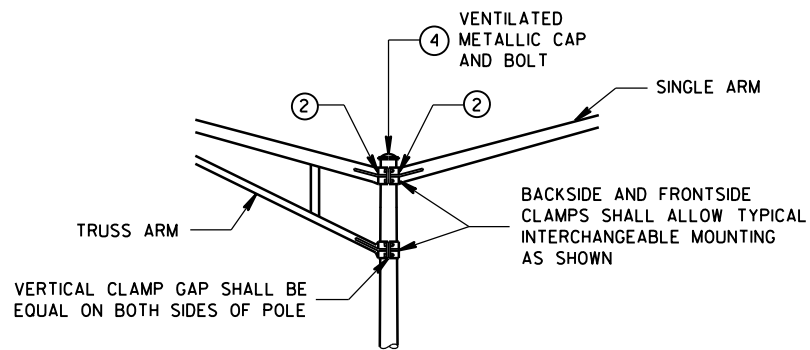
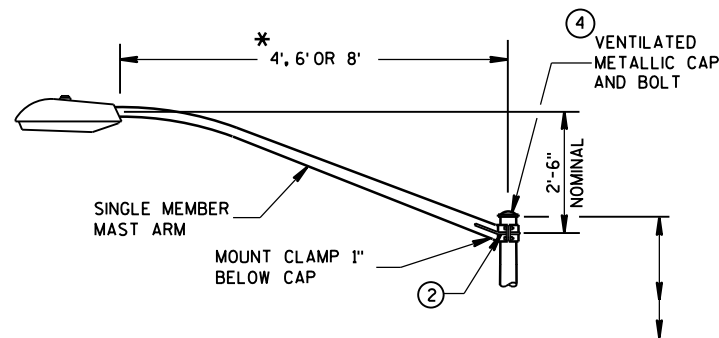
Contact Person:

Ahmet Demirbilek (414) 220-6801

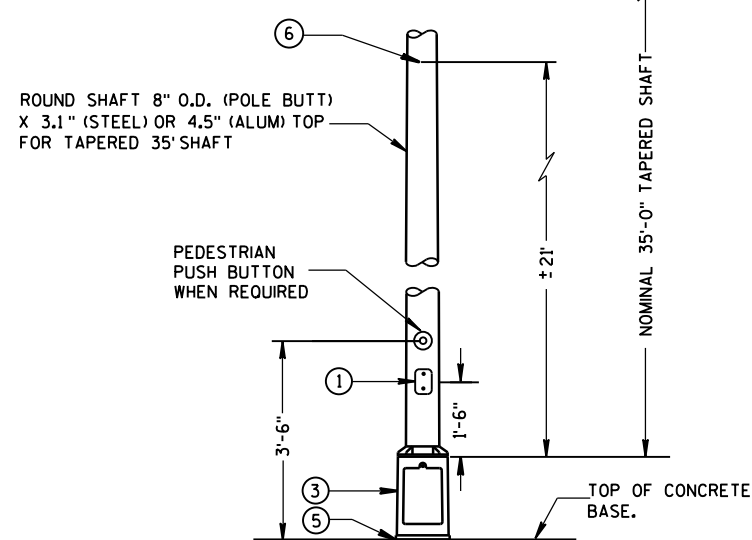
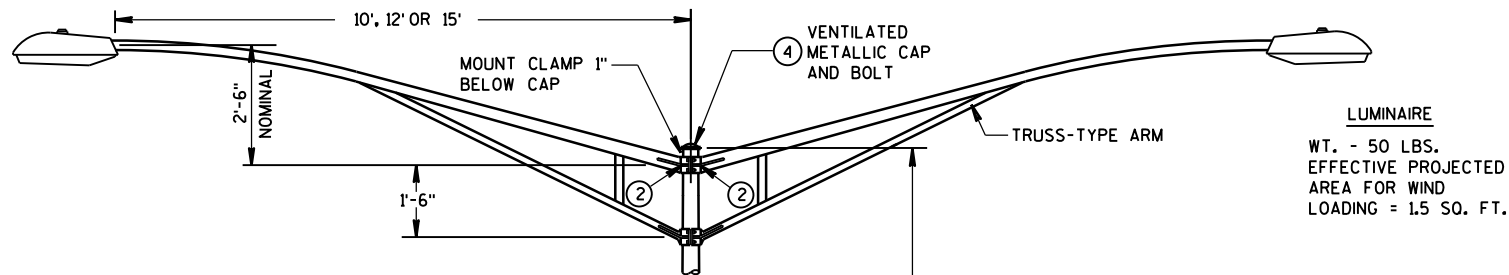


9E1 sheet e: Pole Mountings for Traffic Signals and Lighting Units Type 6 (35 feet)

* RISE FOR 4' ARM SHALL BE 2'-0".



INTERCHANGEABLE MOUNTING DETAIL



TYPE 6 POLE MOUNTING CONFIGURATION
(MAXIMUM LOAD)
LIGHTING ONLY

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

ALL TYPE 6 POLE MOUNTINGS SHALL BE DESIGNED TO INCLUDE TWIN 15' ARMS WITH LUMNAIRES.

POLES SHALL BE EITHER GALVANIZED STEEL OR ALUMINUM, AS CALLED FOR IN THE CONTRACT.

TYPE 6 ALUMINUM POLES, SHALL BE CONSTRUCTED OF 6063-T6 ALUMINUM ALLOY. SLEEVING INSIDE THE POLE IS NOT ACCEPTABLE.

THE TYPE 6 ALUMINUM POLES SHALL HAVE MINIMUM WALL THICKNESS OF 0.219".

TYPE 6 STEEL POLES SHALL HAVE A MINIMUM WALL THICKNESS OF U.S. STANDARD 11 GAGE (.1196").

THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 2 3/8 INCHES IN OUTSIDE DIAMETER. THE STRAIGHT PORTION OF THE SLIPFITTER END OF THE LUMINAIRE ARM SHALL BE A NOMINAL 12 INCHES IN LENGTH.

WHEN TRANSFORMER BASES ARE USED, WIRE CONNECTIONS SHALL BE MADE IN THE TRANSFORMER BASE.

- ① 4" x 6" REINFORCED HANDHOLE & COVER ASSEMBLY WITH 2 (TWO) 1/4" x 3/4" - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.
- ② GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR 1 3/8" HOLE IN POLE SHAFT FOR WIRING.
- ③ CAST ALUMINUM TRANSFORMER BASE, WHEN REQUIRED.
- ④ FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) 1/4" x 3/4" - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.
- ⑤ SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND THE TRANSFORMER BASE.
- ⑥ INTERNAL DUMBBELL-TYPE VIBRATION DAMPER.

POLE MOUNTINGS FOR
LIGHTING UNITS, TYPE 6
(35 FEET)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

*Pole Mountings for Traffic Signals and Lighting Units Type 6 (35 feet)***References:**

[Standard Spec 657](#) - Poles, Arms, Standards, and Bases

Bid items associated with this drawing:

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
654.0106	Concrete Bases Type 6	EACH
655.0600 - 0699	Electrical Wire Lighting (AWG)	EACH
657.0255	Transformer Bases Breakaway 11 1/2-Inch Bolt Circle	EACH
657.0326	Poles Type 6-Steel	EACH
657.0327	Poles Type 6-Aluminum	EACH
657.0605	Luminaire Arms Single Member 4 1/2-Inch Clamp 4-FT	EACH
657.0609	Luminaire Arms Single Member 4-Inch Clamp 6-FT	EACH
657.0610	Luminaire Arms Single Member 4 1/2-Inch Clamp 6-FT	EACH
657.0614	Luminaire Arms Single Member 4-Inch Clamp 8-FT	EACH
657.0615	Luminaire Arms Single Member 4 1/2-Inch Clamp 8-FT	EACH
657.0704	Luminaire Arms Truss Type 4-Inch Clamp 10-FT	EACH
657.0705	Luminaire Arms Truss Type 4 1/2-Inch Clamp 10-FT	EACH
657.0709	Luminaire Arms Truss Type 4-Inch Clamp 12-FT	EACH
657.0710	Luminaire Arms Truss Type 4 1/2-Inch Clamp 12-FT	EACH
657.0714	Luminaire Arms Truss Type 4-Inch Clamp 15-FT	EACH
657.0715	Luminaire Arms Truss Type 4 1/2-Inch Clamp 15-FT	EACH
659.1100 - 1199	Luminaires Utility LED (Category)	EACH

Standardized Special Provisions associated with this drawing:

<u>STSP NUMBER</u>	<u>TITLE</u>
NONE	

Other SDDs associated with this drawing:

SDD 9c2	Concrete Base, Type 1, 2, 5 and 6
SDD 9c3	Transformer/Pedestal Bases
SDD 9e1	Hardware Details for Pole Mountings sheet "g" is required.
SDD 9e2	Freeway Lighting Unit Pole Wiring
SDD 9e3	Non-Freeway Lighting Unit Pole Wiring

Design Notes:

- Use 4-inch clamps with steel poles.
- Use 4 1/2-inch clamps with aluminum poles.

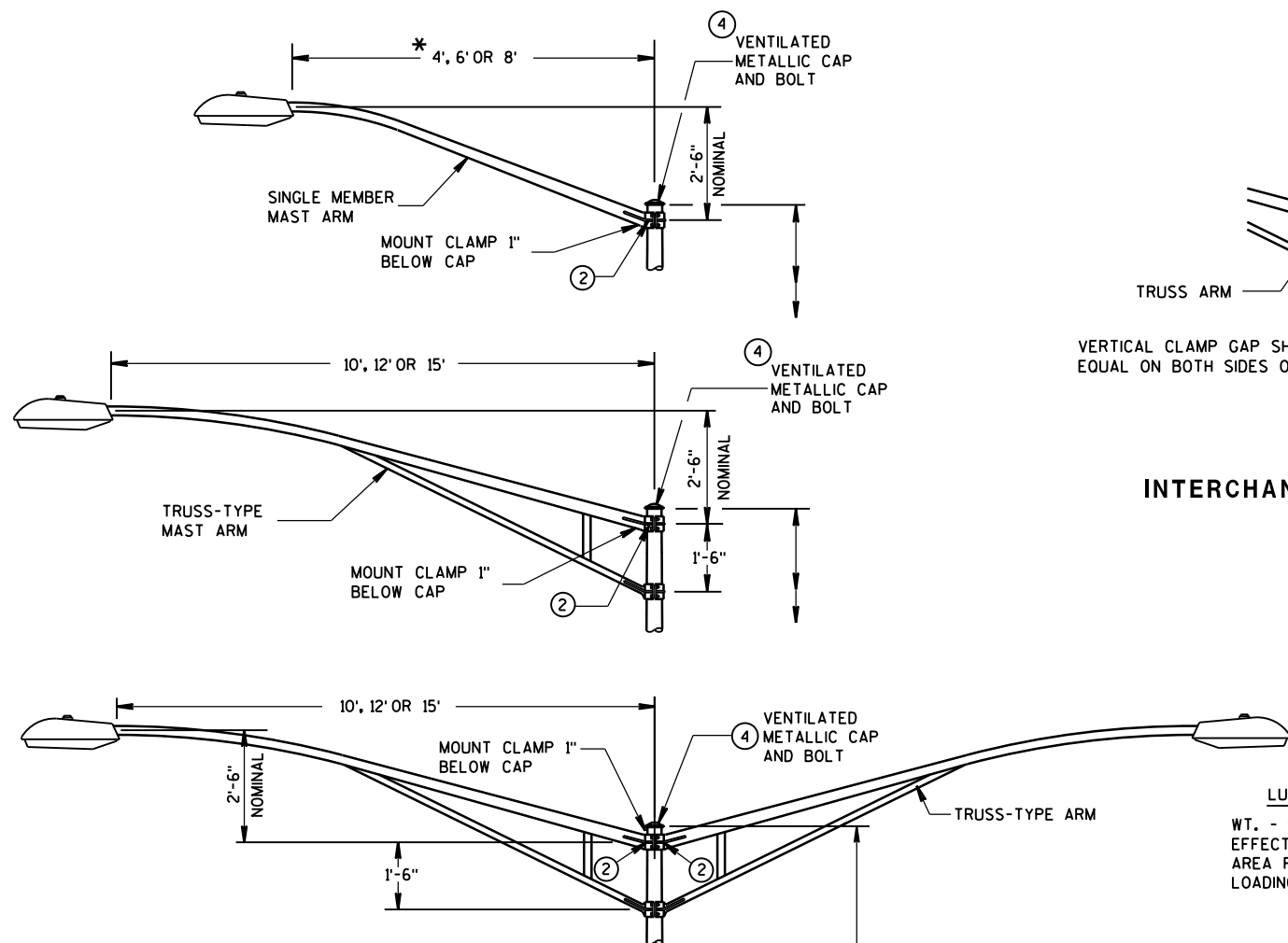
Contact Person:

Ahmet Demirbilek (414) 220-6801

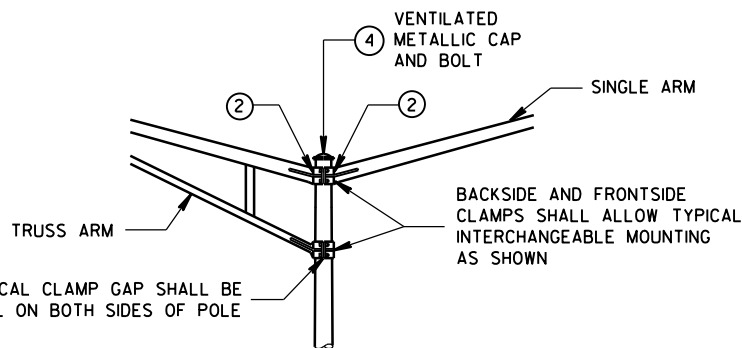


9E1 sheet f: Pole Mountings for Traffic Signals and Lighting Units Type 17 (40 feet)

*RISE FOR 4' ARM SHALL BE 2'-0".



INTERCHANGEABLE MOUNTING DETAIL



GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

ALL LUMINAIRE POLE MOUNTINGS SHALL BE DESIGNED FOR TWIN 15' ARMS WITH LUMINAIRES.

POLES SHALL BE GALVANIZED STEEL OR ALUMINUM, AS CALLED FOR IN THE CONTRACT.

TYPE 17 ALUMINUM POLES SHALL BE CONSTRUCTED OF 6063-T6 ALUMINUM ALLOY. SLEEVEING INSIDE THE POLE IS NOT ACCEPTABLE.

TYPE 17 STEEL POLES SHALL HAVE A MINIMUM WALL THICKNESS OF U.S. STANDARD 11 GAGE (.1196").

THE SHOE BASE SHALL BE SLOTTED TO ACCEPT A 15" BOLT CIRCLE (14" X 16" SLOT) USING 1" ANCHOR RODS.

THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 2 3/8 INCHES IN OUTSIDE DIAMETER. THE STRAIGHT PORTION OF THE SLIPFITTER END OF THE LUMINAIRE ARM SHALL BE A NOMINAL 12 INCHES IN LENGTH.

WHEN TRANSFORMER BASES ARE USED, WIRE CONNECTIONS SHALL BE MADE IN THE TRANSFORMER BASE.

- ① 4" x 6" REINFORCED HANDHOLE & COVER ASSEMBLY WITH 2 (TWO) 1/4" x 3/4" - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.
- ② GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR A 1 3/8" HOLE IN THE POLE SHAFT FOR WIRING.
- ③ CAST ALUMINUM FHWA APPROVED TRANSFORMER BASE WHEN REQUIRED, SHALL HAVE AN ULTIMATE STATIC LOAD STRENGTH OF AT LEAST 40,000 FT. - LBS.
- ④ FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) 1/4" x 3/4" - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.
- ⑤ SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND THE TRANSFORMER BASE.
- ⑥ INTERNAL DUMBBELL-TYPE VIBRATION DAMPER.

TYPE 17 POLE MOUNTING CONFIGURATION
(MAXIMUM LOAD)
LIGHTING ONLY

POLE MOUNTINGS FOR
LIGHTING UNIT, TYPE 17
(40 FEET)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

*Pole Mountings for Traffic Signals and Lighting Units Type 17 (40 feet)***References:**

[Standard Spec 657](#) Poles, Arms, Standards, and Bases

Bid items associated with this drawing:

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
654.0107	Concrete Bases Type 7	EACH
655.0600 - 0699	Electrical Wire Lighting (AWG)	EACH
657.0210	Transformer Bases Breakaway 15-17 Inch Bolt Circle.....	EACH
657.0336	Poles Type 17-Steel	EACH
657.0337	Poles Type 17-Aluminum	EACH
657.0620	Luminaire Arms Single Member 6-Inch Clamp 4-FT	EACH
657.0625	Luminaire Arms Single Member 6-Inch Clamp 6-FT	EACH
657.0630	Luminaire Arms Single Member 6-Inch Clamp 8-FT	EACH
657.0635	Luminaire Arms Single Member 6-Inch Clamp 10-FT	EACH
657.0640	Luminaire Arms Single Member 6-Inch Clamp 15-FT	EACH
657.0725	Luminaire Arms Truss Type 6-Inch Clamp 15-FT	EACH
657.0730	Luminaire Arms Truss Type 6-Inch Clamp 12-FT	EACH
657.0735	Luminaire Arms Truss Type 6-Inch Clamp 10-FT	EACH
659.1100 - 1199	Luminaires Utility LED (Category)	EACH

Standardized Special Provisions associated with this drawing:

<u>STSP NUMBER</u>	<u>TITLE</u>
NONE	

Other SDDs associated with this drawing:

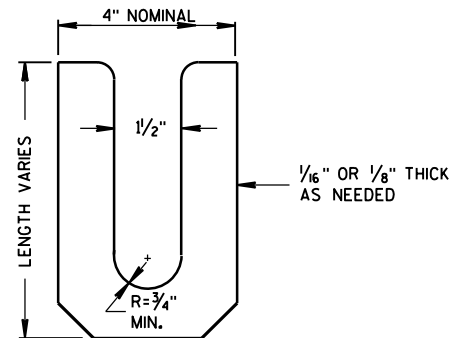
SDD 9c8	Concrete Base, Type 7
SDD 9c10	Transformer Base for 15-Inch Bolt Circle
SDD 9e1	Hardware Details for Pole Mountings sheet "g" is required.
SDD 9e2	Freeway Lighting Unit Pole Wiring
SDD 9e3	Non-Freeway Lighting Unit Pole Wiring

Design Notes:

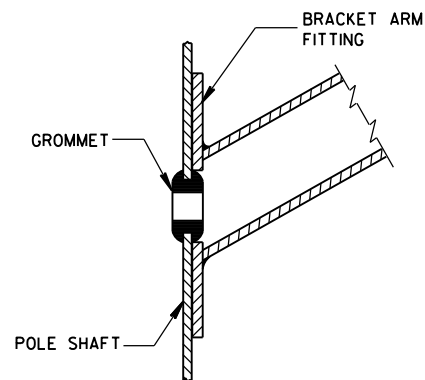
NONE

Contact Person:

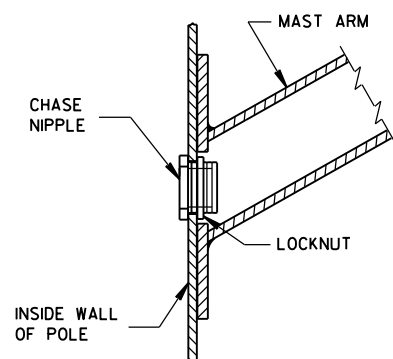
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LEVELING SHIM
SHALL BE ALUMINUM



TYPICAL APPLICATION OF GROMMET IN POLE SHAFT



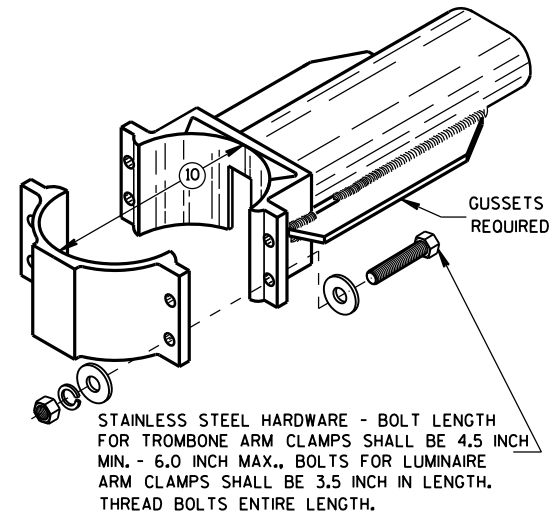
TYPICAL APPLICATION OF CHASE NIPPLE IN POLE SHAFT

GENERAL NOTES

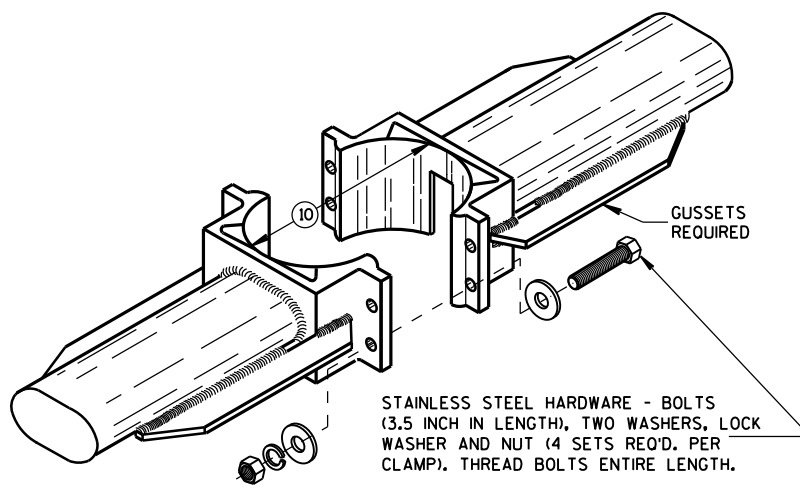
CLAMP BOLT-NUT TIGHTENING TORQUE SHALL BE INDICATED BY INDENT STAMPING (1/2 INCH NUMERALS AND LETTERS) OR WEATHERPROOF PRINTING ON THE INSIDE OF THE CLAMP THAT IS WELDED TO THE ARM MEMBER.

- ⑩ 4.5" I.D. FOR LUMINAIRE MAST ARM CLAMP.
6.625" I.D. FOR TROMBONE MAST ARM CLAMP.
- ⑪ INDIVIDUAL BASE PLATE ANCHOR ROD COVERS. (4 REQUIRED)
- ⑫ BASE PLATE SLOTTED TO ACCEPT 11" THROUGH 12" BOLT
CIRCLE USING 1" DIAMETER ANCHOR RODS.
- ⑬ LEVELING SHIMS, DESIGNED FOR THE PURPOSE, SHALL BE USED WHEN PLUMBING
POLES. THE USE OF WASHERS IN LIEU OF PROPER LEVELING SHIMS IS NOT
ACCEPTABLE. LEVELING SHIMS SHALL BE USED ONLY BETWEEN THE TOP OF THE
CONCRETE BASE AND A METALLIC BASE PLATE.

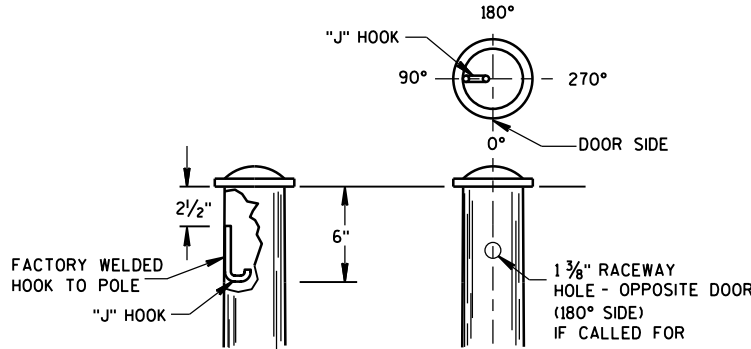
SHIMS SHALL BE LONG ENOUGH AND WIDE ENOUGH TO COMPLETELY COVER THE
AREA UNDER THE LENGTH AND WIDTH OF THE BASE MOUNTING FLANGE.



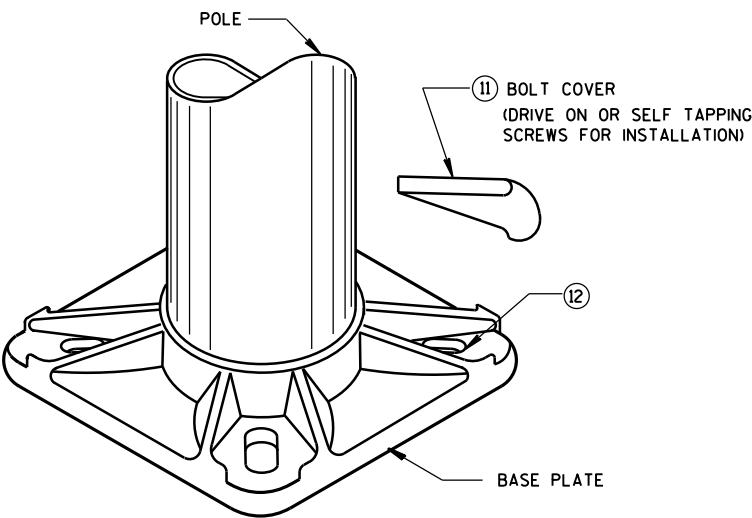
TYPICAL TROMBONE MAST ARM AND SINGLE LUMINAIRE MAST ARM MOUNTING CLAMP



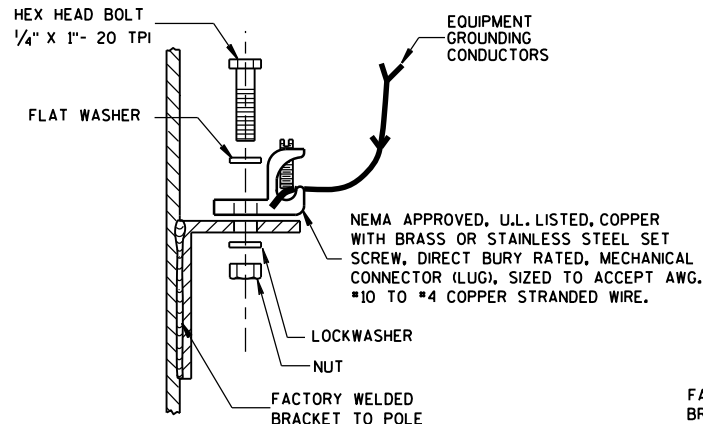
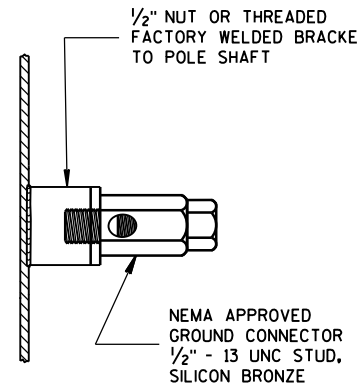
TYPICAL LUMINAIRE MAST ARM (DOUBLE) MOUNTING BRACKETS



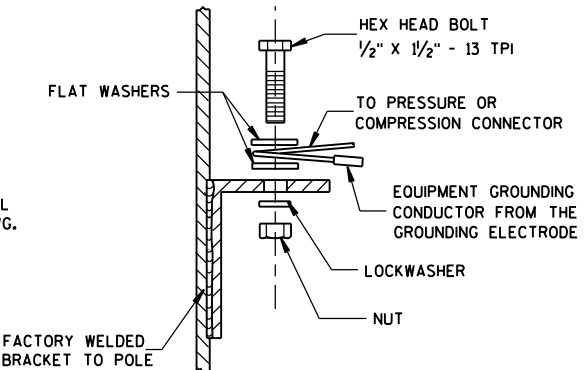
TYPICAL "J" HOOK LOCATION



BASE PLATE



TYPICAL GROUNDING CONNECTIONS
NUT, BOLT AND WASHERS SHALL
BE STAINLESS STEEL



HARDWARE DETAILS FOR POLE MOUNTINGS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Feb. 2015
DATE
/S/ Ahmet Demirbilek
STATE ELECTRICAL ENGINEER
FHWA

*Hardware Details for Pole Mountings***References:**

[Standard Spec 657](#) - Poles, Arms, Standards, and Bases

Bid items associated with this drawing:

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
657.0315	Poles Type 4.....	EACH
657.0321	Poles Type 5-Steel	EACH
657.0322	Poles Type 5-Aluminum	EACH
657.0326	Poles Type 6-Steel	EACH
657.0327	Poles Type 6-Aluminum	EACH
657.0336	Poles Type 17-Steel	EACH
657.0337	Poles Type 17-Aluminum	EACH

Standardized Special Provisions associated with this drawing:

<u>STSP NUMBER</u>	<u>TITLE</u>
NONE	

Other SDDs associated with this drawing:

SDD 9e1	Pole Mountings for Traffic Signals Type 2 sheet "a"
SDD 9e1	Pole Mountings for Traffic Signals and Lighting Units Type 3 (Heavy Duty) sheet "b"
SDD 9e1	Pole Mountings for Traffic Signals and Lighting Units Type 4 sheet "c"
SDD 9e1	Pole Mountings for Lighting Units Type 5 (30 feet) sheet "d"
SDD 9e1	Pole Mountings for Lighting Units Type 6 (35 feet) sheet "e"
SDD 9e1	Pole Mountings for Lighting Units Type 17 (40 feet) sheet "f"

Design Notes:

This drawing is required when SDD 9e1 sheets "a", "b", "c", "d", "e", or "f" is called for in the plans.

Contact Person:

Ahmet Demirbilek (414) 220-6801